

**Final Report/Summary of Research**

**Galileo Educational Curriculum Grant  
for Science Improvement**

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# 1 Introduction - Galileo Mission to Jupiter

The Galileo mission to Jupiter, an international venture to the solar system's largest planet, is a dual-spacecraft mission managed by the Jet Propulsion Laboratory (JPL) in California. Consisting of a Jupiter orbiter built by JPL and an atmospheric entry probe managed by NASA Ames Research Center and built by Hughes Aircraft Company, Galileo will answer fundamental questions about the origin and evolution of the solar system. The mission objectives are to investigate the chemical composition and physical state of Jupiter's atmosphere and the Jovian satellites, and to study the structure and physical dynamics of the Jovian magnetosphere. This mission entails a number of firsts, including 1) the first interplanetary mission to include major participation by another country (Germany), 2) the first mission to use gravity assist techniques to reach an outer planet, 3) the first close encounter with main belt asteroids, 4) the first permanent orbiter of an outer planet, and 5) the first in situ sampling of an outer planet.

## 2 Program Objectives

The primary objective of the Galileo Educational Curriculum Grant for Science Improvement (Galileo Ed) is to develop science educational curricula based on the Galileo mission to Jupiter, with primary emphasis on the entry probe mission. The goals of Galileo Ed are to:

1. develop relevant and exciting hands-on science curriculum and materials,
2. integrate existing school science curriculums,
3. increase interest in and knowledge of space exploration,
4. actively involve students in the interpretation and analysis of real science data .

The Galileo Educational Curriculum Grant for Science Improvement (Galileo Ed) is a program for the design, development, and distribution of science curricula, activities, and materials based on the Galileo probe/orbiter mission to Jupiter. The program has developed materials for use by elementary grades and, throughout the fall semester, has offered assistance in the implementation of Galileo Ed activities. The excitement of a current NASA outer planetary exploration mission offers a means of complementing existing science curricula at all grade levels with actual science data. As the encounter date of December 7 approached students learned about the engineering of planetary exploration missions, studied objects in the solar system that have been explored, and those that still await detailed exploration, and the physics of reaching the outer solar system and returning pictures and science data. In anticipation of the probe mission

on December 7, students plotted the probe and orbiter Jupiter approach trajectories, and studied Jupiter and its moons.

During the project period a number of elementary schools in three states participated in Galileo Ed. These include St. Mary's school and Russell School in Moscow, Idaho; Blue Ridge Elementary School in Walla Walla, Washington; and Ybarra School in Walnut, California. Each school was visited by the project Principal Investigator, and each received materials developed for and by project Galileo Ed for use in the classroom.

### **3 Dissemination of Results**

Galileo Ed was featured at several meetings at conferences in Idaho, including the annual summer workshop for teachers TEACH (Teaching Astronomy to CHildren), IdaHOES (40 teachers meeting to discuss hands on science), and IDETEC-M (20 teachers working on engineering and technology). Additionally, Galileo Ed was presented at the annual Idaho Science Teachers Association (ISTA) conference in October.